

South Broad Street Bridge
Spanning the Elizabeth River
Elizabeth
Union County
New Jersey

HAER NO. NJ-39

HAER
NJ,
20-ELI,
14 -

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
MID-ATLANTIC REGION NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR
PHILADELPHIA, PENNSYLVANIA 19106

Location: between 24 and 30 South Broad St., Elizabeth, N.J.

Present Owner and Occupant: City of Elizabeth, N.J.

Present Use: As bridge on a major street in Elizabeth

Significance: Well preserved exterior sides of cut brownstone bridge erected in 1874.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of Erection: 1874
2. Architect: unknown
3. Original and Subsequent Owners: City of Elizabeth
4. Builder, Contractor, Suppliers: unknown
5. Original Plans and Construction: none known
6. Alterations and Additions: New sidewalk in 1927. New concrete railings in 1930.

- B. Historical Context:** A stone bridge existed at this location during the colonial period. Its date of construction is not known, but a woodcut made about 1840 shows a four arch stone bridge which is probably the 18th century structure. It became the focal point of a growing community, with a market place and wharf, a grist mill, the county court house, several churches and various homes and business establishments nearby.

Historical data gathered for this report indicates that the colonial period bridge crossed the river at an angle. That bridge was replaced by an equally narrow bridge crossing at a right angle about 1850. By 1874 the existing wide bridge was built, as part of a general street paving and improvement program. Subsequent work has included a new sidewalk in 1927, new concrete railings in 1930, and maintenance and repairs in 1938 and 1956. The South Broad Street bridge is still functioning as it did when it was built, in 1874, in the center of the City of Elizabeth.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural Character: functional cut coursed brownstone bridge, supported on three semi-circular vaults.
2. Condition of Fabric: Good

B. Description of Exterior:

1. Overall Dimensions: 65ft. long, 92ft. wide, pavement is 14ft. above MLW. Top of arches 10ft. above MLW.
2. Structural System: Load bearing stone masonry arches.

C. Site:

1. General Setting and Orientation: bridge runs north and south, on alignment of South Broad Street, in center of City of Elizabeth. Elizabeth River flows from west to east under bridge.

PART III. SOURCES OF INFORMATION

- A. Original Architectural Drawings: none available
- B. Early Views: (Barber & Howe 1844:159) shows previous bridge. (Elizabeth Daily Journal 1889:128) shows 1874 iron railings which were removed in 1930.
- C. Interviews: Charles Aquilinas (interviewed by C.Orgel)
- D. Bibliography: (appended)
- E. Likely Sources Not Yet Investigated: Essex Co. Bridge and Road records (for data prior to 1857).

Prepared by: S.Kardas & E.Larrabee

Principal Investigators

Historic Sites Research, Princeton, N.J.

27 Sept.1982

PART IV. PROJECT INFORMATION

Elizabeth River Flood Control Project, (U.S.Army Corps of Engineers: New York District). This will entirely remove the bridge.

RECORDING OF
SOUTH BROAD STREET BRIDGE
CITY OF ELIZABETH,
UNION COUNTY, NEW JERSEY

FOR
U.S.ARMY
CORPS OF ENGINEERS
NEW YORK DISTRICT
BY
HISTORIC SITES RESEARCH
PRINCETON, NEW JERSEY

S.KARDAS. PH.D., S.O.P.A.
E.LARRABEE, PH.D., S.O.P.A.
(PRINCIPAL INVESTIGATORS)

SEPTEMBER 1982

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MAP LIST

- 1775-1783 Map of Elizabeth Town, N.J.
by Ernes L. Meyer, published 1879
- ca. 1840 Map of Elizabethtown, by John Bevan
(outline copy in City Engineer's Office)
- ca. 1851 Map of Elizabethtown, Essex County, N.J., by John Bevan
(may be source of ca. 1840 map)
- 1869 Commissioners Map of Elizabeth, Sheet 7.
- 1872 State Atlas of New Jersey, F.W. Beers page 77.
- 1882 Atlas of Union County, New Jersey, E. Robinson
Wards 3,4, & 8, Sheets 10, 11, 15.
- 1900 Elizabeth Sheet, New Jersey Geological Survey
- 1905 State Atlas of New Jersey, Westgard, page 11.
- 1906 Atlas of Union County, E. Robinson
Wards 6,7,9 & 10, Sheet 5.
- 1958 Sanborn Insurance Maps of Elizabeth, N.J.
Sheets 14 and 204.
- 1967 Elizabeth, N.J. U.S.G.S.

SUMMARY ABSTRACT

Record photographs were made, and a documentary history compiled for the South Broad Street Bridge in the City of Elizabeth, New Jersey. It is concluded that the existing bridge was built about 1874, and has had minor alterations and maintenance since then. A narrow stone bridge crossed the river in this general location, but on a different alignment during the Colonial Period. The early bridge is believed to have survived into the 1840's, and then to have been replaced by a narrow bridge on the modern alignment which existed from about 1850 to 1874, at which time the existing bridge was built. No evidence was found of any prior bridge in manual field excavation. It is not believed that the existing bridge incorporates any of the Colonial Period bridge in its structure, but it is recommended that demolition of the existing bridge be monitored to record features of construction and any possible buried evidence of the earlier bridges which stood at this location.

I. ADMINISTRATIVE INFORMATION / PURPOSE OF STUDY

The primary purpose of this study is stated in the Scope of Work which accompanied a Request for Quotation (NANSU - P-82-36), dated 20 January 1982. The subject of this study is the South Broad Street Bridge in the City of Elizabeth which was considered eligible for inclusion in the State and National Registers of Historic Places by State Historic Preservation Officer opinion, 3 January 1980, and determined eligible for listing on the National and New Jersey State Registers on 17 July 1980 (NJ DEP 1980: 53). This required that the structure be recorded before demolition. A copy of the Scope of Work of 20 January 1982 follows:

II. DESCRIPTION OF THIS STUDY AND RECORDING

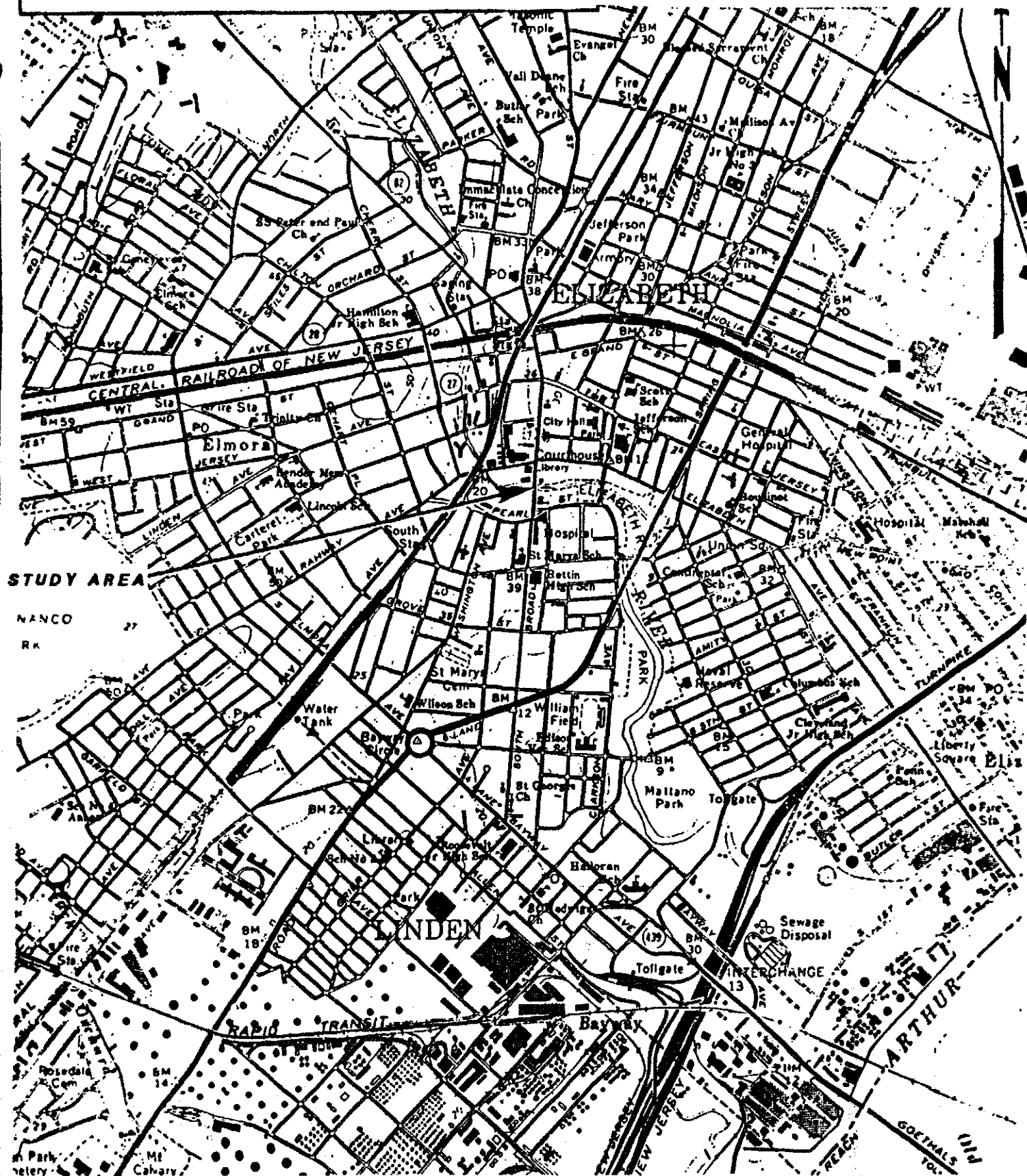
The existing reconnaissance reports were studied carefully (Kraft 1977, Valentine & Rothschild 1977, and Leo et al 1979). Additional material was examined or collected at the following sources:

The Elizabeth Free Public Library
The City of Elizabeth Engineers Office
The Union County Court House, Hall of Records
The Union County Engineers Office
The New Jersey State Archives, Trenton
The Office of Cultural and Environmental Services
N.J. Department of Environmental Protection
The Firestone Library, Princeton University

After gathering historical data, a narrative history of the bridge in its setting was compiled (Section IV of this report). This was used to guide the field work, and for interpreting our findings. Field work was performed in July 1982, to determine if manual excavation could produce data which would answer certain questions concerning this bridge. That work and its results are described in Section V.A. At the same time, record photographs were taken of the bridge. Section V.B. describes this process, and the treatment of the photographs.

2000 0 2000 4000
scale in feet

SOUTH BROAD STREET BRIDGE
HAER NO. NJ-39
(Page 11)



PROJECT LOCATION MAP

plotted on USGS Quad:

Elizabeth, N.J. - N.Y. (1967)

BROAD ST. BRIDGE DOCUMENTATION

ELIZABETH RIVER FLOOD CONTROL PROJECT

UNION COUNTY, N.J.

FIGURE 1

III. DESCRIPTION OF THE STRUCTURE

The bridge consists of three semi-circular vaults running east-west, supporting the north-south alignment of South Broad Street (see View 4). In general the Elizabeth River flows from north to south, but at this point it is flowing east, so that the upstream side of the bridge faces west, and the downstream side faces east. The bridge is 92 feet wide (roadway, sidewalks, and railings) from east to west and 65 feet long, north to south, which is slightly longer than the width of the channelized stream bed at normal flow. The county records indicate that the arches measure 17 1/2 feet, the 1930 plan shows a span of about 16 1/2 feet and scaling from photographs suggests as much as 18 feet for the central arch. The lamp standards which form part of the concrete railing built in 1930 measure 20 feet, 21 feet, and 20 feet apart, and were supposed to be placed directly over the piers, according to the 1930 plan. That suggests symmetry with a central arch slightly wider than the two side arches, which would indicate that this bridge was designed and built as a three arch structure, and never had a fourth arch. It should be noted that the 1930 plans show the concrete railings in detail, not the stone arches. Measurements taken by the Historic Sites Research field team in 1982 indicate that those dimensions accurately represent the actual spacing of the lamp standards as built.

An attempt was made to measure from center of keystone to center of keystone by plumbline. This indicated 20 feet, 8 inches and 20 feet 11 inches, but is not considered precise, due to difficulty in determining the exact center of each arch from the

bridge railing directly above. It does suggest that the two distances between the three keystones is about 21 feet which tends to confirm the 21 feet shown from center to center of pillars on each side of the middle arch on the 1930 plan.

In summary, the roadway is supported on three semi-circular vaults, each with a span of about 17 to 18 feet and a length of about 90 feet. The measurements which could be taken indicate that the central arch is about 1 foot wider than the two side arches. Clearance from mean low water to the top of the vault is approximately 10 feet.

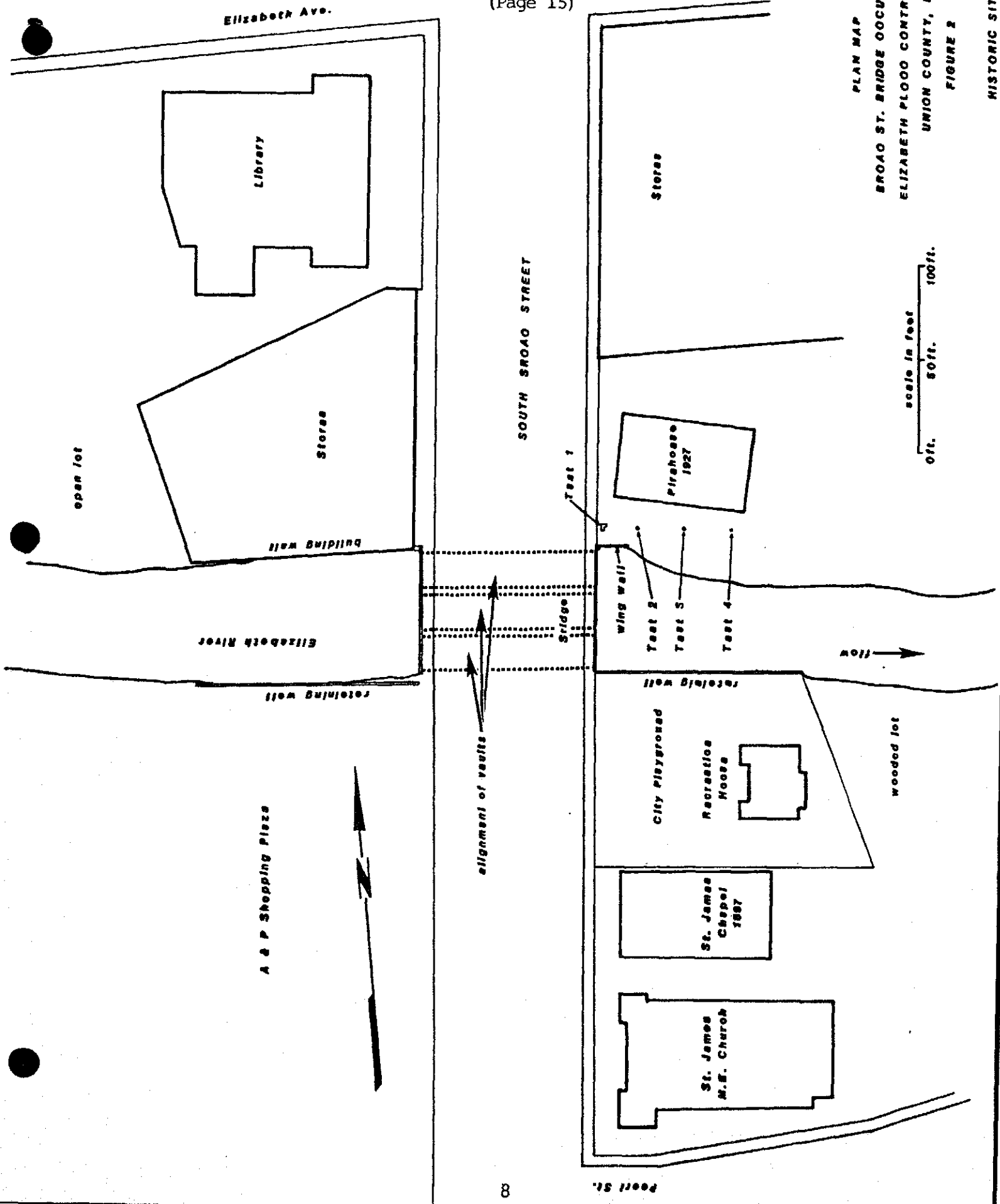
The masonry on the two sides of the bridge, below the 1930 concrete railings, is of coursed brownstone. The stones are rectangular, typically about 12 inches high and 18 inches long with some smaller stones about 6 inches high and 12 inches long and a few larger stones as much as 15 inches high and 30 inches long. These cut rectangular blocks of various sizes are combined to create complete courses, but the courses vary in height, as can be seen from the photographs (see Views 4, 5, 6, and 10).

The faces of the brownstones are dressed by pointwork and the margins are chiseled (McKee 1977: 24-25). This is apparently true for most of the stones, but 20th century mortar pointing has hidden the margins in many cases. Chiseled margins are particularly evident on voussoirs and keystones of the arches. The voussoirs are very regular, measuring about 15 by 20 inches, and the keystones, which are raised, are slightly larger (ca. 16 by 22 inches, see Views 6 and 10).

The vault interiors are completely covered with gunite (concrete mortar applied wet, by spraying with pneumatic pressure through a hose), so no details of vault masonry are visible. Modern pointing is in "brush point" style (Rivinus 1972: 67). Samples were removed from some of the pointing on the east side of the bridge. The material was extremely hard, whitish (Munsell 7.5YR N8/) and contained an aggregate of finely crushed stone with little or no sand and no lime. This meets all the specifications of material for gunite application, and is clearly a 20th century Portland cement (McKee 1977: 64-69). This material was examined by Mr. Gerald Weber, Restoration Supervisor at the Schermerhorn Row Project for the E.W. Howell Co., specialists in historic restoration and reconstruction, who confirmed this identification. The samples were probably part of the gunite applied in 1938, but may have been from the 1956 repair.

We conclude that the bridge was built of coursed brownstone blocks which were finished with point work and chiseled edges; that 20th century gunite completely obscures the vaults and that Portland cement mortar similar in consistency to the gunite has been used for repointing, which obscures any earlier mortar, and much of the masonry detail. In general style the masonry is consistent with functional stonework of the Victorian period, which has received common 20th maintenance and railing treatment. The overall physical appearance is very similar to the North Avenue Bridge, which seems to have been built in the same style and surmounted in the early 20th century with concrete railings almost identical to those put on the South Broad Street Bridge in 1930 (Leo et al. 1979: 65-67).

SOUTH BROAD STREET BRIDGE
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PLAN MAP

BROAD ST. BRIDGE OCCUPATION
ELIZABETH FLOOD CONTROL PROJECT
UNION COUNTY, N.J.

FIGURE 2

HISTORIC SITES RESEARCH

IV HISTORICAL DATA

A. Prior Assumptions Concerning The Bridge

The project task was specifically to collect historical data relating to the existing Broad Street Bridge; however, this study also provides documentation of this historic river crossing and its related structures overlooked by two previous surveys.

It is recorded by earlier Cultural Resource Reconnaissances that an 18th century bridge spanned the Elizabeth River and was part of a major transportation corridor between north and south Jersey. The first study, done in 1977, noted that the river was navigable by sailing craft as far as the Broad Street Bridge, and that at one time a large covered wharf and mill formed the locus of a community here (Kraft 1977). A second study was focused on a historic site at South Pearl and Grove Streets, and is not relevant to the present research (Valentine & Rothschild 1977).

In December 1979, Ralph Leo, David Church, Herbert Githens and Edward S. Rutsch submitted a more detailed Reconnaissance level evaluation on the Elizabeth River Project, including the South Broad Street Bridge, in order to "to combine review and analysis of the two prior research reports with the necessary documentary and infield analysis which would yield data for clearly defining the impact of the proposed construction upon any extant cultural resources within the project area". The results of the 1979 Reconnaissance identified the South Broad Street Bridge as eligible for inclusion on the National Register of Historic Places and directly within the zone of construction (Leo et al 1979:5).

According to the above-cited report, this bridge area formed the nucleus of the village of Elizabethtown. The authors noted the presence of an 18th century mill and a marketplace and "many shops, warehouses and small manufacturies" (1979:45).

Their description of the bridge follows:

Presently the Broad Street bridge displays a concrete surface, erected upon the old stone bridge during the 1930's by the Board of Chosen Freeholders. Below this concrete the bridge is cut brownstone and is composed of a triple span with three semicircular vaults. These archways are lined with concrete, possibly also a 1930s modification. On the side of the former market (now the site of the firehouse), a brick wall with brownstone coping may be evidence of the filled-in fourth arch (see Figure 20). The area of the fourth span was probably filled in to accommodate the created landscape of the firehouse (see Figure 22)." (1979:48)

Citing a view claimed to date "before the end of the 18th century" from Thayer's As We Were (1964) , the authors of the third reconnaissance further claim that "a significant portion /of a four arched 18th century structure / of the old stone bridge... has survived from the eighteenth century. This significant structure exists on the downstream, southern side of Broad Street (the roadway and the bridge were apparently widened in the upstream direction). This structure may be the oldest surviving bridge in Elizabeth, and most likely, is one of the oldest stone bridges in the state" (1979:47). It appears that the above-cited conclusion is based on two assumptions:

1. that the present Broad Street Bridge is, or incorporates portions of, an 18th century bridge.
2. that the four span bridge which is illustrated in a book by Thayer (1964) is an accurate representation of the 18th century bridge which spanned the Elizabeth River at Broad Street.

These assumptions need to be substantiated or re-evaluated. No researcher has been able to locate any detailed plans or colonial records which describe the bridge as it was originally constructed. The woodcut which lies at the heart of this controversy and reproduced in Thayer 1964 is not identified by that author as to source or date.

B. Documentary Evidence Concerning the Bridge

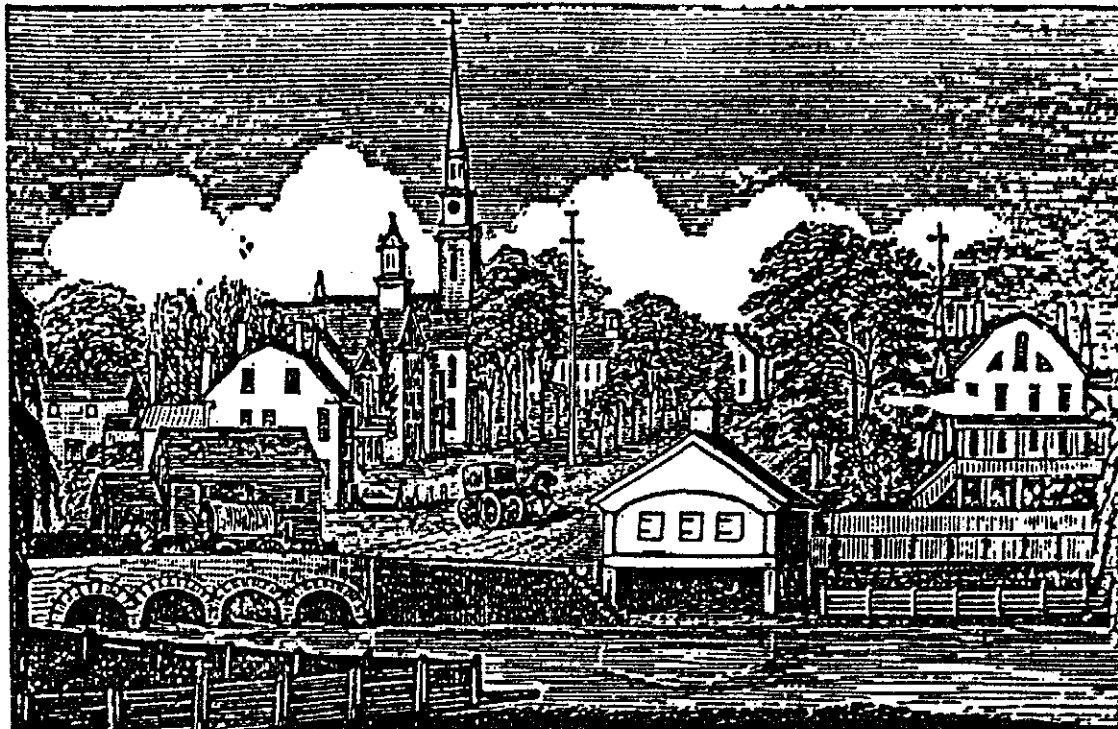
Union County records regarding this bridge state simply that the South Street Bridge (No. 7) is "a stone bridge with 3 stone arches constructed about 1874". New sidewalks were laid in 1927 and new concrete railings constructed in 1930 (Union County Engineer Record Books, vol. 4 n.d.). This is consistent with the recollections of a local historian, Chancellor William J. Magie who wrote for a newspaper article:

I propose to state briefly my recollections of Broad street from the river to the railroads. My observations commenced as early as 1838.

The present bridge over the river on Broad street is not in the position of the bridge which existed in my earliest recollection. The north abutments of that bridge were within the boundaries of Broad street, but the south abutments were entirely without those boundaries. The bridge, therefore, crossed the river diagonally, and its south end was upon the street now called Washington street. This bridge was built at a very early date, and most of the traffic north and south through New Jersey passed over it. It may also be mentioned that the river was formerly navigable to vessels of some size as far up as a wharf, the timbers of which were visible in my time. This wharf was covered by the south abutments of the present bridge (Magie undated newspaper clipping in Elizabeth Free Public Library files).

Research into primary records reveal that Thayer's illustration was taken from a woodcut engraving in the 1844 edition of Barber and Howe's Historical Collections of the State of New Jersey (1844:159, see Figure 3). Barber and Howe discuss this "annexed engraving" on the same page, stating that the Presbyterian Church which stands in the center of the woodcut was completed after 1792 on the site of an earlier Presbyterian Church that had been burned by the Hessians in 1780 during Baron Knyphausen's incursion (1844: 159-160). The woodcut also shows the Episcopal Church and the 2nd Presbyterian Church, the latter of which was constructed after 1819. Therefore this woodcut must have been made after 1819 and represents the bridge as it appeared around 1840. Another version of this scene is shown in an oil painting which hangs in the reference section of the Elizabeth Free Public Library (see Figure 3). This painting is signed by S.W. Alvars and has the figure '97' or possibly '77' which may represent a date (1897?). The painting is in undeteriorated condition and the style resembles latter 19th or early 20th century works. From this we conclude that the view drawn about 1840 shows a prior bridge, (the one verbally discussed by Magie) which crossed the river diagonally, and that the existing bridge, built in 1874, completely replaced the Colonial Period bridge.

Although no detailed plans of the bridge exist before the 20th century, there are maps of Elizabeth and vicinity which show a sequence which is consistent with the interpretation given above. An 18th century "Map of Elizabethtown" between 1775 and



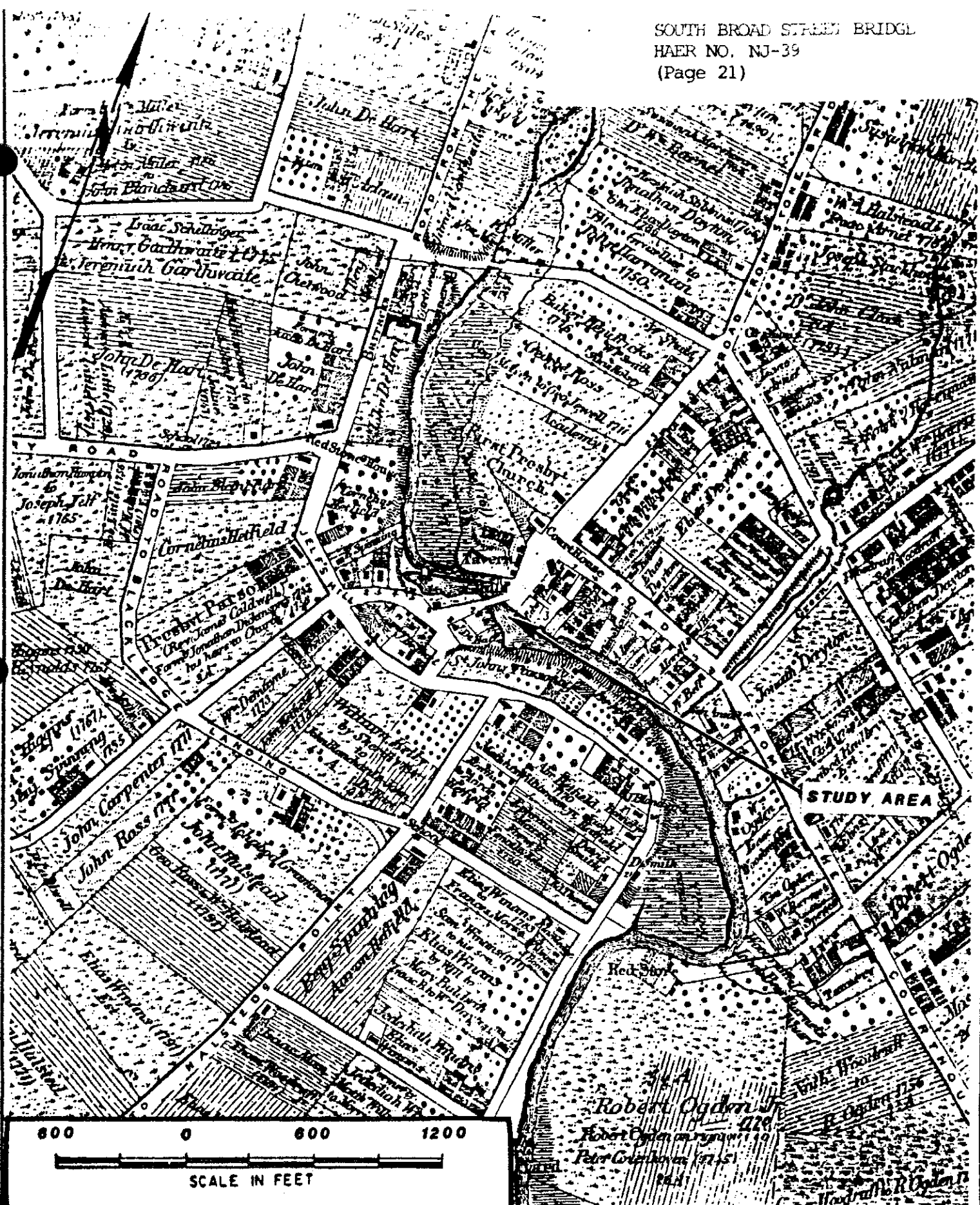
Looking up Broad Street from the Stone Bridge, 1795 and after.
(Thayer 1964: 153, original from Barber & Howe 1844: 159)



Painting in Elizabeth Free Library, signed "S.W.Alvars 97"
(probably derived from Barber & Howe engraving)

FIGURE 3

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J.



"MAP OF ELIZABETH TOWN," N.J."

ERNEST L. MEYER - 1879

1775-1783

BROAD ST. BRIDGE DOCUMENTATION

ELIZABETH RIVER FLOOD CONTROL PROJECT

UNION COUNTY, N.J.

FIGURE 4

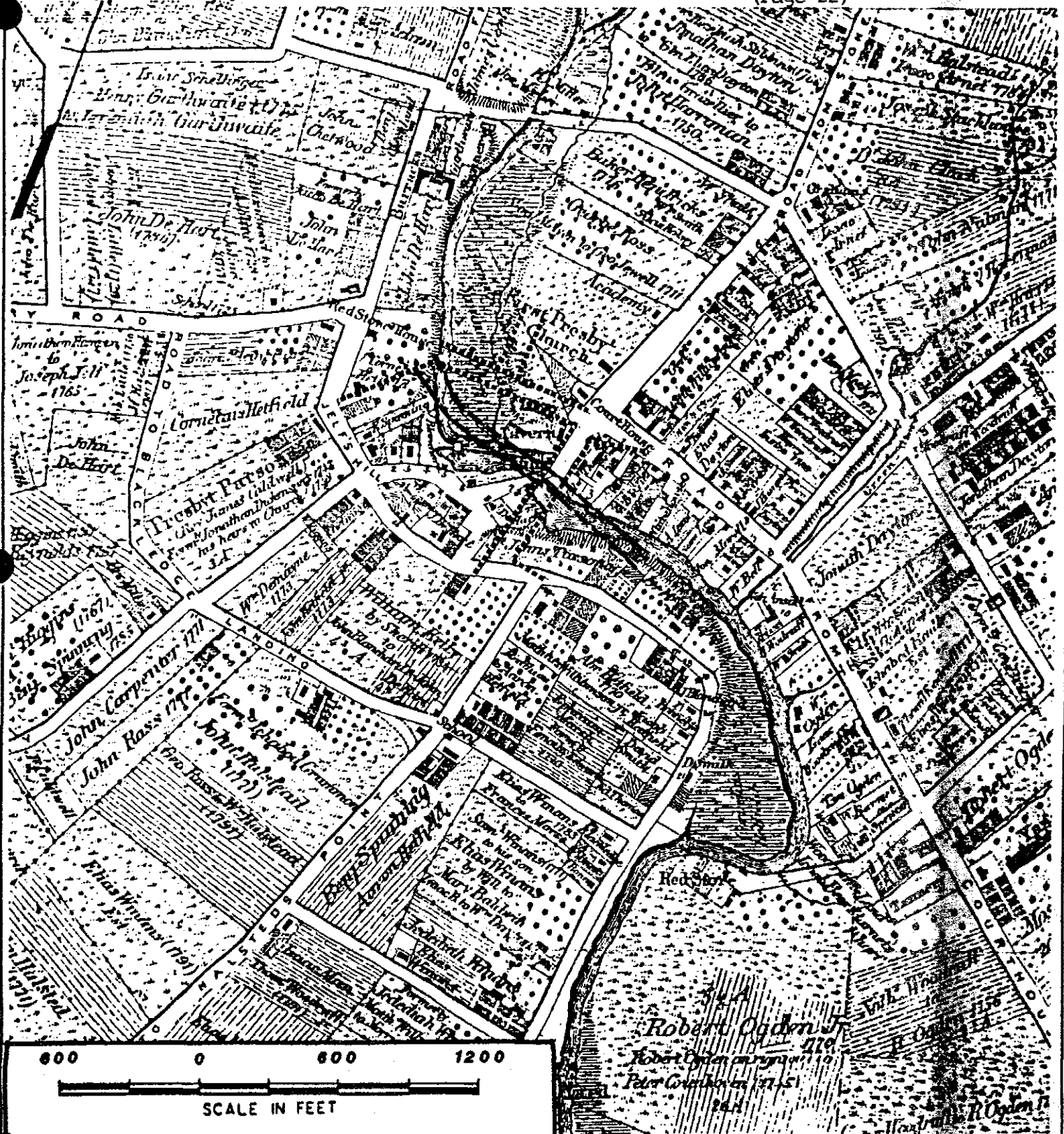
----- Indicates present alignment of Elizabeth River

..... Indicates present alignment of roads and bridge

SOUTH BROAD STREET BRIDGE

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MAP OF ELIZABETH TOWN, "N.J."

ERNEST L. MEYER - 1879

1775-1783

PRESENT ROAD & BRIDGE ALIGNMENTS

BROAD ST. BRIDGE DOCUMENTATION

ELIZABETH RIVER FLOOD CONTROL PROJECT

UNION COUNTY, N.J.

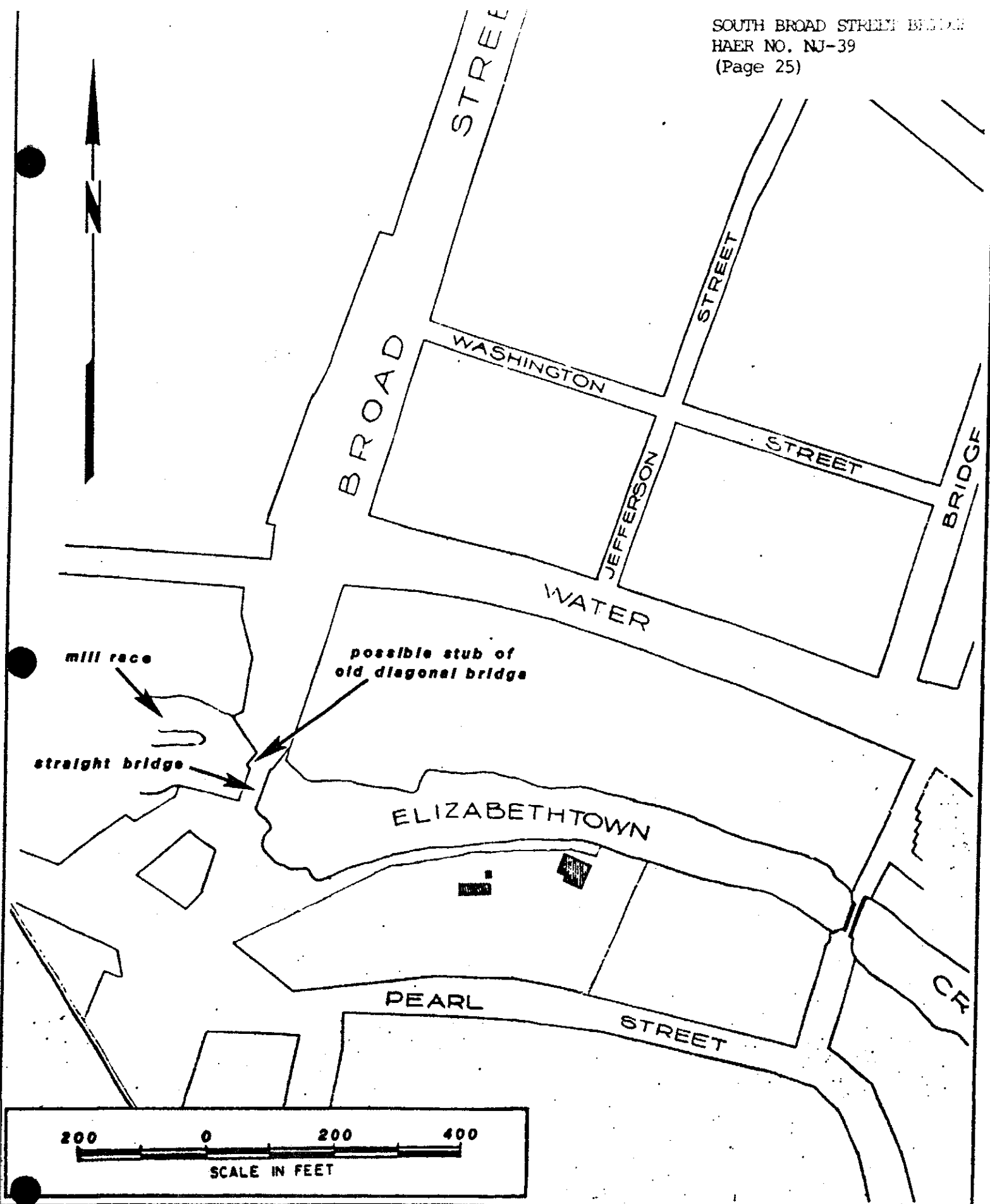
FIGURE 5

1783 was printed in 1879 (see Figure 4). It shows what is now Broad Street north of the Stone Bridge running almost due north on its present alignment, but with a narrow bridge turning south-where South Broad Street now runs. The 1879 version of this map has a contemporary map of the streets of Elizabeth printed on the reverse of the map, so that when held to the light, the viewer can see the superposition of changes made between the 1770's and the 1870's. Unfortunately, it is not possible to copy this superimposition, and the recent reissue of the map by the New Jersey Historical Society omits the 1879 rear overlay entirely. We have marked a copy of this map using the 1879 data and modern maps to show the difference between the late 18th century and modern alignment (Figure 5). This illustrates that the "Stone Bridge" of the Colonial period did not lie in the same position as the existing bridge, except possibly near the north end, and that its width was much narrower than the present bridge. The south end would have been where part of the A&P parking lot now stands.

An 1804 road map between Philadelphia and New York shows a road, in strip form, through Elizabeth with a sharp bend at the river crossing (not reproduced here; Snyder 1973:93). This suggests that the angled alignment indicated for 1775-1783 was still in existence in 1804. According to the recollections of Chancellor William J. Magie quoted above, the angled alignment persisted until his childhood memories began, as early as 1838.

A map dated about 1840, in the City Engineers Office shows in outline the street right-of-way at that time. It shows a narrow bridge across the river (labelled Elizabeth Creek) aligned with Broad Street on the north side of the river (Figure 6). The bridge seems no wider than that on the 1775-1783 map but has a different shape and axis. A stub of the earlier bridge is suggested. The alignment of streets on the south side of the river suggests that an earlier bridge did turn to the southwest as the 1775-1783 and 1804 maps show. That angled bridge may be the one which appears with four stone arches in Barber & Howe (1844:159), and was reproduced without ascription by Thayer (1964:153), and then became the source for the interpretation that a colonial period four-arched bridge was incorporated into the existing bridge (Leo et al 1979: 48, 49).

Another map dating to about 1850 shows a similiar situation. This map exists in the City Engineers Office where it is known as the "upside down" map and cannot be reproduced. It is probable that both the ca. 1840 and 1850 maps are versions of the John Bevan map of Elizabeth which has been dated about 1851 (Kraft 1977). Shortly after the set of circa 1850 Bevan related maps were made, there was a map made by Meyer in 1858 showing the "Central and Northern Part of the City of Elizabeth". The bridge situation shown at that time is unchanged from the narrow straight bridge shown on the Bevan related maps. This suggests that the angled 18th century bridge may have been replaced shortly before 1850 by an equally narrow bridge that ran as a straight southward extension of Broad Street.



"MAP OF ELIZABETHTOWN"

by John Bevan

ca. 1840

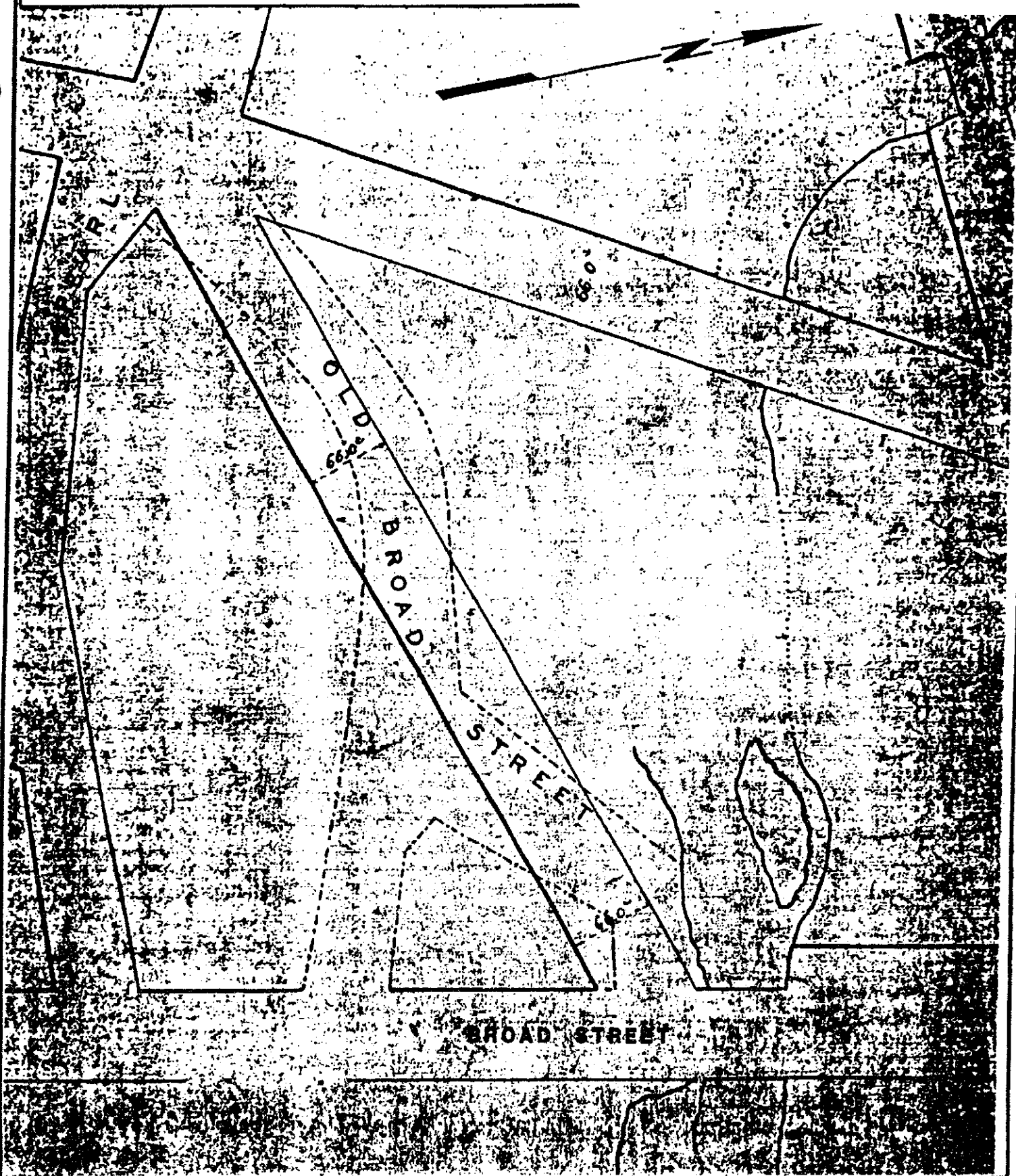
BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J. FIGURE 6

Yet another right-of-way map, made in 1869, shows "Old Broad Street", which preserved the location of the former south terminus for the 18th century bridge, in the process of being vacated and replaced by a new straight road which became Washington Avenue. (This avenue has since also been vacated and lies under the A & P building and parking lot.) The bridge shown in 1868 is much wider than that of 1775-1783 or even 1850-1858, extending to the east margin of the Broad Street right-of-way, but not the west margin. A small channel shown just upstream of the bridge is probably the remains of the mill race (Figure 7). A general map of Elizabeth was published in Beers State Atlas a few years later, and reflects the new arrangement, except that it still shows "Old Broad Street ", indicating that Washington Avenue had not yet become official, or that the atlas was slightly behind in presenting data here (Figure 8).

The next reasonably detailed map, part of a Union County Atlas of 1882, shows the new Washington Avenue not only existing, but lined with structures, some of which must have been built after "Old Broad Street" had been vacated. The bridge is now shown the full width of North Broad Street. South of the bridge and Washington Avenue, "S. Broad" is slightly narrower. This is the first depiction of the bridge which is there at present, reportedly built in 1874 (Figure 9).

Several general area maps, of 1900 and 1905, and detailed property atlases of 1906 and 1958, confirm that the street and bridge situation first shown in 1882 remained unchanged until at least 1960 (Figures 10 through 13). On September 22nd of that

100 0 100 200
SCALE IN FEET

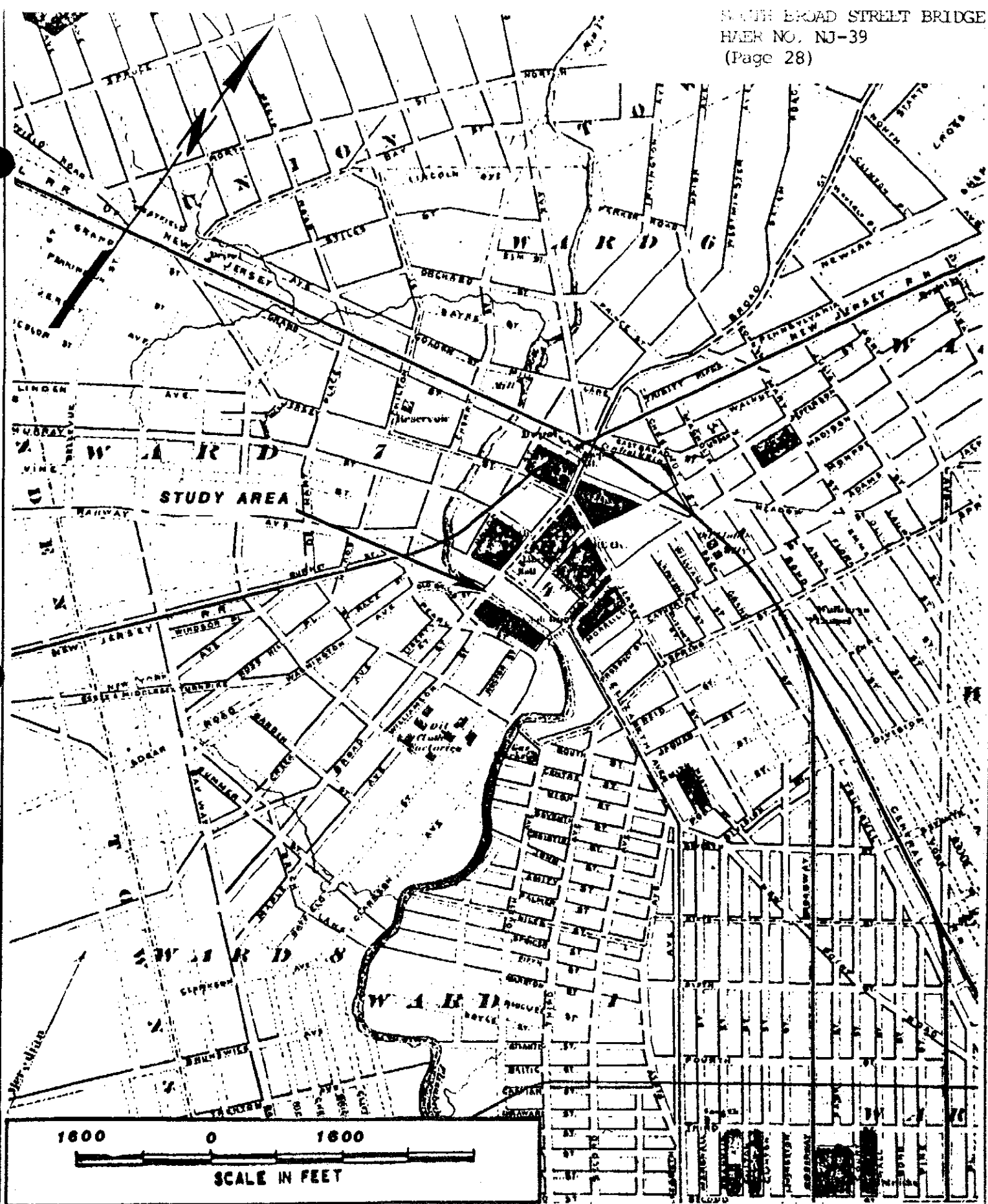


"COMMISSIONER'S MAP OF ELIZABETH"

1869

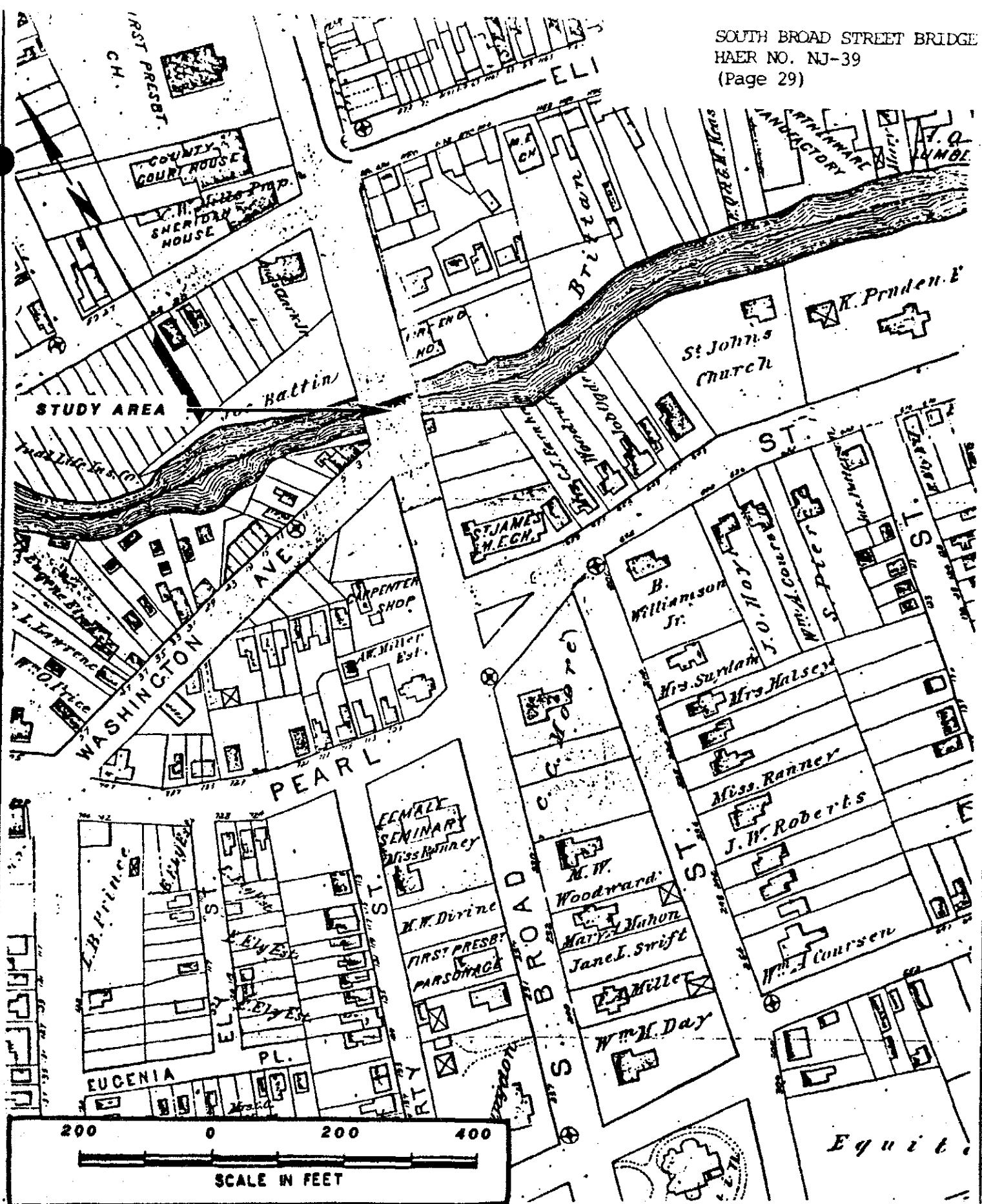
Sheet 7, Elizabeth City Engineering Dept.

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J. FIGURE 7



1872 - 80 BEERS
STATE ATLAS OF N.J.
p.77

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J.
FIGURE 8

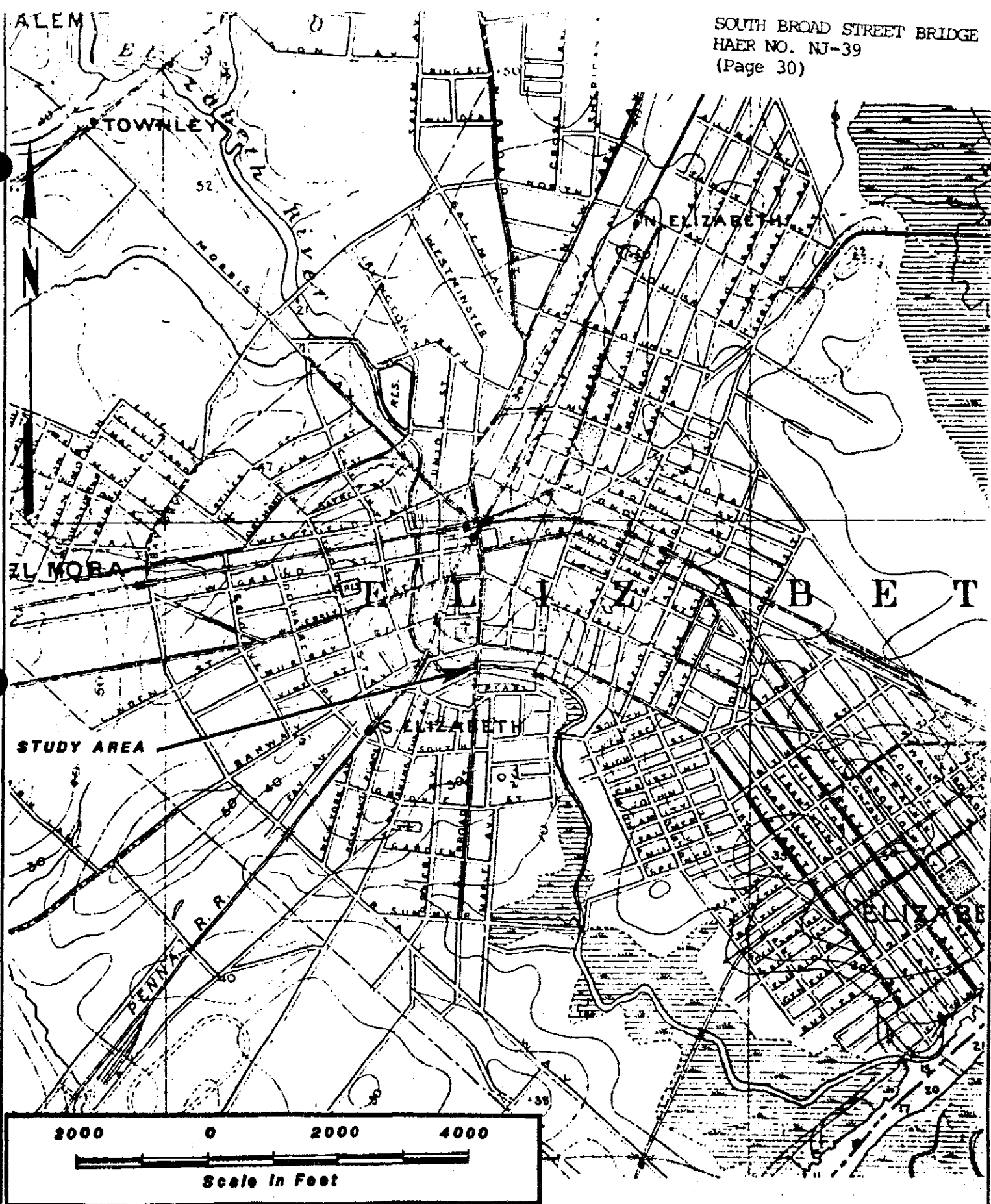


ATLAS OF UNION COUNTY

ROBINSON 1882

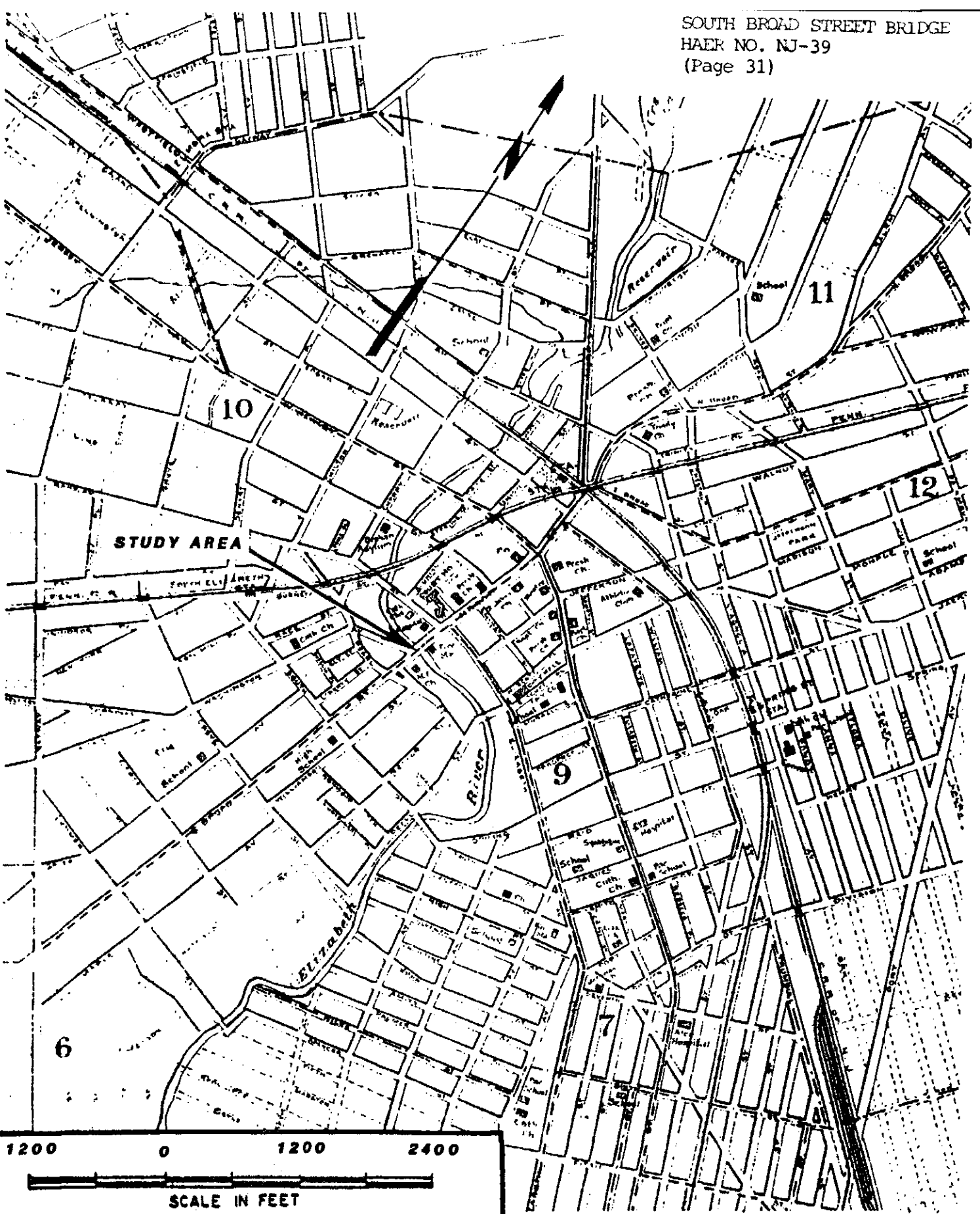
(WARDS 3,4,88) (SHEETS 15,10&11)

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J.
FIGURE 9



NEW JERSEY GEOLOGICAL SURVEY
ELIZABETH SHEET
1900 EDITION

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J.
FIGURE 10



STATE ATLAS OF NEW JERSEY

WESTGARD 1905

p. 11

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J.
FIGURE 11



"ATLAS OF UNION COUNTY"

ROBINSON 1906

(WARDS 6,7,9&10) (SHEET 5)

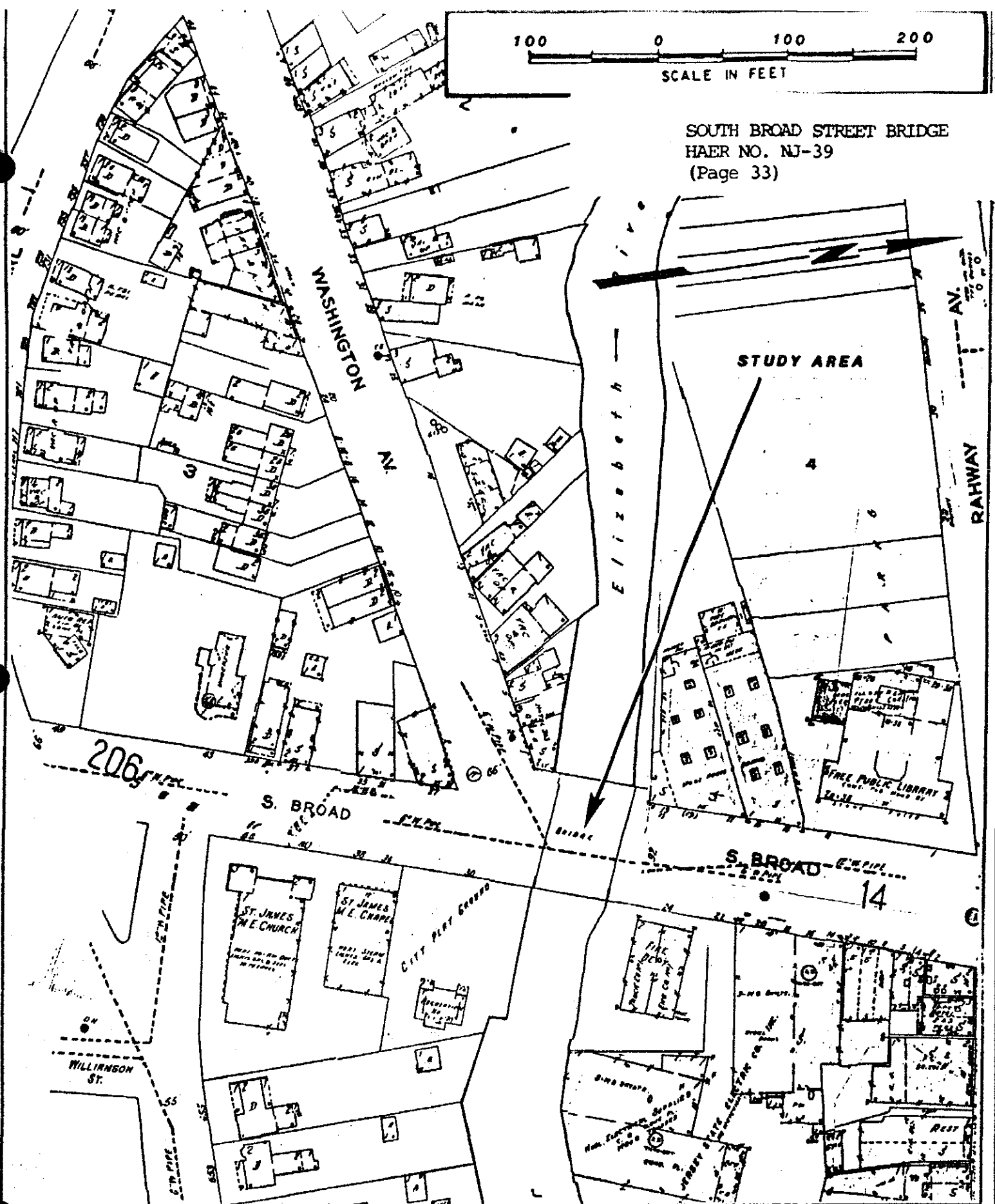
BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT

UNION COUNTY, N.J.

FIGURE 12

100 0 100 200
SCALE IN FEET

SOUTH BROAD STREET BRIDGE
HAER NO. NJ-39
(Page 33)



1958 ELIZABETH, N.J.
SANBORN MAP COMPANY
(SHEETS 14, 204)

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J.
FIGURE 13

year there was an ordinance which caused Washington Avenue in its entirety from South Broad Street to Pearl Street to be vacated and closed (Road Vacations, Book 8, page 296, Union County Hall of Records). The entire block through which South Broad Street and later Washington Avenue is now occupied by an A & P grocery and a shopping center.

All detailed evidence for the bridge itself is of 20th century date. The card in the bridge file in the County Engineer's Office reads:

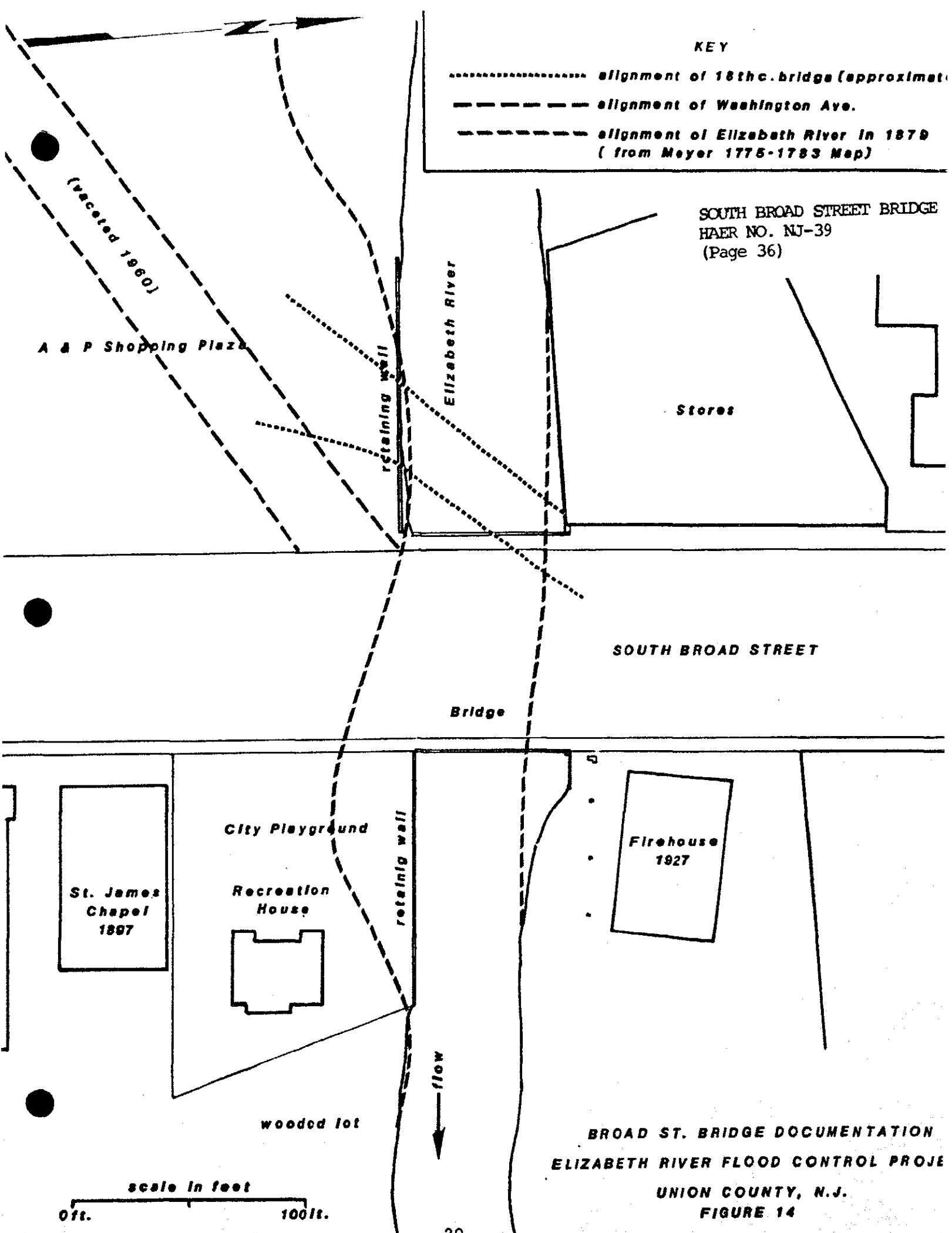
South Broad St. over the Elizabeth River
Stone Bridge with 3 stone arches. Constructed
about 1874. No plans available. Iron railings
upon copings. (3 spans 17 1/2 ' each)
10' 3" cl. /clearance/.
New Concrete Railings Constructed 1930
New sidewalk constructed 1927

Detailed plans were drawn for both these improvements and copies were made available to us through the courtesy of Mr. Frank J. Petrick, Director of the Union County Division of Engineering. The 1927 plan shows only the concrete sidewalk along the east side of the bridge, which replaced an existing (flagstone ?) walk, because all copings, drains, etc. were to be retained. In 1930 the iron railings were replaced with concrete railings which still exist. An 1889 photograph of Sheridan's Sash Mill shows part of the 1874 bridge with its original iron railing (Elizabeth Daily Journal 1889: 128). An idealized plan and profile of the bridge was drawn for the 1930 construction. Unfortunately the bridge arches are only shown as light dotted lines, with all detail reserved for the new railings. These two large drawings are not reproduced, because they are not directly related to the 1874 bridge.

Other records in the Union County Engineering Office show that Masonry repairs and repointing were made in 1938, and 1956. During this period Gunite was sprayed on the interior of the arches.

There is also some evidence concerning street surfacing, which indicate likely periods of road construction and likely times for bridge alterations. Flagstone sidewalks were placed along Broad Street by the mid 19th Century, reportedly equal in size to those in New York (Thayer 1964: 251). City Engineers's records indicate that about 1870 a number of streets were widened and paved. The Commissioners' 1869 map showing Washington Avenue replacing the irregular shape of "Old Broad Street" south of the bridge reflects this activity. By 1889 Broad Street was paved with Belgian Block stones, extending as far as South Street (Elizabeth Daily Journal 1889: 53). This must have been replaced with similiar material in July, 1916, when City Engineer's Street Records show South Broad Street receiving "Granite Block" paving.

Figure 14, which follows shows the 18th century bridge alignment and Washington Avenue (1869 - 1960), which have been discussed in relationship to the existing bridge.



KEY

- alignment of 18th c. bridge (approximate)
- alignment of Washington Ave.
- alignment of Elizabeth River in 1879 (from Meyer 1775-1783 Map)

SOUTH BROAD STREET BRIDGE
HAER NO. NJ-39
(Page 36)

A & P Shopping Plaza

Stores

SOUTH BROAD STREET

Bridge

City Playground

Firehouse
1927

St. James
Chapel
1897

Recreation
House

wooded lot

flow

scale in feet

0ft. 100ft.

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J.
FIGURE 14

C. Related Property Records

Evidence concerning property adjacent to the bridge indicates uses of the land and improvements related to the bridge. A mill stood upstream from the bridge on the north bank. The first mill here dated from at least 1735 when it was advertised for sale (N.Y.Gazette 25 August 1735). It was described as "the old mill which yet stands " in William De Hart's Passages of the History of Elizabeth Town written in 1846, quoted in Hatfield 1868: 431). Thayer describes this as John Ogden's old "Corn Mill" which had been owned by a succession of 18th century millers (1964: 85). It operated until at least the middle of the 19th century (1964:251). Visible evidence of this or a successor mill was reported until at least 1880 (Clayton 1882: 180). Early in the 20th century it was remembered by Chancellor Magie :

Proceeding north along the west side of Broad street, the first building in my recollection was an old mill. Whether it was the mill built by John Ogden, one of the original settlers, in the very early dates of settlement, or one afterward built to replace it I do not know. There was a dam crossed the river a little above the bridge, and the water was delivered from it to an undershot wheel, and then was returned to the river just at the west side of the bridge. The power was small and no great amount of work could be done with it. What it was used for at the time of my first recollection I do not know. When I was attending school in the Thomas house in the latter part of the 1840's, it was used to press linseed oil out of linseed.(Magie , undated newspaper in Elizabeth Free Public Library Files).

By 1889 the old Ogden mill site had been obscured by Patrick Sheridan's Mill, which produced "Sash, Blinds, Doors, etc." (Elizabeth Daily Journal 1889: 128). No mill is shown on the 1882 map (Figure 9), so the Sheridan mill must have been built between then and 1889.

On the downstream side of the bridge on the north bank is a fire house for Engine Company No. 1. The history of this property has been detailed in the section on field survey of this report. The south bank was occupied by the Veteran Zouaves armory after 1891, and was later purchased in 1907 by the City of Elizabeth for \$11,800 from Chancey A. Ryder. In 1915 it became a City Playground (Hague 1920: 82, 175). It is still used by the City Recreation Department in 1982.

V. FIELD INVESTIGATION AND RECORDING

A. Field Testing

Examination was planned to test the hypothesis, proposed in the second reconnaissance report that a fourth arch may have existed on the alignment of the present bridge, at the north end, more or less in front of the firehouse (Leo et al 1979:49). It was also designed to examine evidence derived from the additional historical research, which indicated that the north end of the colonial period bridge touched the river bank at a location now near the north end of the existing bridge, although oriented differently from the present bridge. A store now occupies the upstream north bank, precluding testing at this point.

At the downstream side of the bridge on the north bank is a fire house for Engine Company No. 1 built in 1927. This replaced an earlier fire house on this site (see Figure 8). This particular block of property is well documented, and has not been built upon except for the two firehouses and an appended late 19th century armory. The property was sold to the City in 1857 by Alexander and Elizabeth Gibbs for \$1300. From 1881 through 1891 part of the property was used by the Veteran Zouaves (Hague 1920: 175-177). This veteran militia unit leased the land from the city for the erection of an armory. The unit had been organized by General J.M. Drake in 1878, and in 1889 maintained a Gatling Gun Battery in their armory on the fire house grounds (Elizabeth Daily Journal 1889: 80). Shortly after 1891 the building was removed to the opposite side of the river (Hague 1920: 175).

The Historic Sites Research field crew (consisting of 6 persons) excavated four archaeological test pits at the South Broad Street Bridge site on 9 July 1982. All four tests were dug on the north bank of the river near the Broad Street Bridge and adjacent to the firehouse.

Test 1 was a 60" by 42" rectangle excavated to a depth of 60" below ground surface. The southwest corner of the test was 80" north of the end of the concrete bridge rail (at the projected location of a fourth arch, if the present bridge contained one). The west wall of the test was excavated against the northward extended portion of the bridge's east wall, directly parallel to the buried abutment wall, southwest of the front corner of the fire house and along the edge of the sidewalk. This buried wall is shown as one of "Present Walls to be removed to 18 inches Below Surface Grade" on the 1927 drawing. Soils were excavated from the test through 1/2 hardware cloth screens, and carefully sifted and inspected for archaeological remains. The soil was a red brown shaly loam with many rocks and some cultural debris consisting of furnace ash and clinker, broken ironstone, late 19th century bottle glass and window glass and two saggars from a ceramic kiln. None of the material was earlier than circa 1880 and could have been as late as 1920. All material was randomly scattered in the soil which had been deposited here as landfill.

Three other test pits were excavated along the north bank of the river. Test 2 was 20 feet east of test 1, test 3 was 45 feet east of test 1, and test 4 was 70 feet east of test 1. These tests were excavated with a hand auger and the soils were removed

and screened as in test 1. The auger tests were all stopped by rocky landfill (See Test Pit Profiles in Appendix 1). No artifacts were recovered except in the first test which has been described above.

This archaeological testing could have revealed evidence of three historic features:

1. the earlier firehouse dating from the mid 19th century to 1927 (actually the location of this structure is shown on maps dating from 1882 as about where the present firehouse is and not as close to the river as our tests).
2. a buried colonial period bridge pier (pre 1850)
3. The sub-surface remains of the foundations of the Veterans Zouaves Armory (1881-1891). This is the structure which was moved across the river.

There were no indications that any earlier bridge piers or abutments were preserved to the depths which could be reached by hand digging in compacted landfill. All that we found in Test 1 was some late 19th century garbage in landfill, indicating that none of the features could be detected within the areas testable. The buried wall exposed in test 1 was an abutment for the 1874 bridge and was buried as part of the 1927 sidewalk construction.

B. Photographic Recording

The bridge is accessible only by water on its upstream and downstream sides. The Historic Sites Research team used a light canoe with one person stabilizing it while the photographer took record photography. Prior to photography, it was necessary to remove considerable brush, weeds, and tree branches and garbage which obstructed the view (See View 1). The camera used was a 4 inch by 5 inch Crown Graphic Special with a Schnieder-Kreuznach Xenar Lense (1: 4.7/135). Kodak Plus X Panchromatic (ASA 125) Film in cut film holders were exposed. The canoe was also used for close access to the masonry face, in order to examine the stones and take mortar samples. All three vaults of the bridge were also examined.

Ten views of the bridge were taken. The position and angle of view of each of these is indicated on Figure 16, and selected views are reproduced in Appendix 4, as part of this report. Reference is made to them in the text. The complete set of negatives and contact prints, printed on Archive Quality paper and placed in Acid Free envelopes, is made into a separate package accompanying the copy of this report which is intended for Library of Congress retention.

Each negative was developed, stopped and fixed normally. The first wash time was tripled (to Archive Quality of 50 years or greater). The "Hypo" (Perma-wash) and Final Wash were also tripled. The negatives were then air dried.

The contact prints, and the 5 inch by 7 inch enlargements used in this report, were printed on Kodak Double Weight Glossy Surface Polycontrast paper. The prints were treated like the negatives with normal development, stopping and fixing and triple first wash, hypo and final wash. They were placed on an acid free blotter, and then air dried on a rack.

IV. SUMMARY

A. Findings

1. Summary of Field Tests and Physical Examination

A bridge constructed in 1874 measuring approximately 65 feet long and 92 feet wide, consisting of three semi-circular vaults, now crosses the Elizabeth River at South Broad Street. The two exposed sides are of coursed brownstone masonry, now re-pointed with Portland Cement, and the vaults are faced with gunite, which covers all detail of construction. There are no strong stylistic features which would provide a date of construction, but in general the appearance of the masonry is like that of other functional Victorian period bridges.

Archaeological tests were made between the firehouse and the river bank. These revealed a truncated wall, apparently part of the original abutment of the existing bridge, which was partly removed in 1927, and shaly rubble fill with late 19th century artifacts. There was no evidence revealed of an earlier bridge abutment or of any of the earlier structures which once were on the firehouse lot.

2. Summary of Historic Evidence

A "stone bridge" is recorded at this location from at least the mid-18th century. The first bridge was very narrow and crossed the river at an angle, with its north end located under the north end of the existing bridge, and its south end west of the existing bridge near the modern A & P grocery. This bridge alignment survived past 1804, and may be the bridge drawn for Barber & Howe about 1840. Some time shortly after this a new

alignment appeared, with an equally narrow bridge running on the axis of Broad Street existing by at least 1850 and through at least 1858. We believe this was the second bridge at this location. By 1869 a much wider bridge is shown. The existing full width bridge was built in 1874, according to official records and has received only minor alterations and repairs since in 1927, 1930, 1938 and 1956.

It is possible that the narrow second bridge built about 1850 was progressively widened. A more likely sequence is that street widening, paving and general improvements of about 1870 required an entirely new bridge which was built in 1874 and stands today. The evidence for a narrow second bridge (existing ca. 1850 to 1874 on the same alignment as the existing bridge) is circumstantial. However, there is overwhelming documentary evidence to show that the existing bridge is a 19th century bridge, and bears no relationship to the sharply angled 18th century bridge, except that it crosses the Elizabeth River at approximately the same location. It may incorporate part of the hypothesized second bridge but this is considered unlikely. In any event, the downstream face now visible cannot be earlier than 1869, and the upstream face must be later (Figure 7). The official date of 1874 is congruent with independent evidence so we consider it an accurate date for the construction of the present bridge in its entirety.

B. Recommendations

Manual excavation in the shaly fill adjacent to the firehouse was unable to penetrate more than 5 feet, and no excavation was feasible in or under the bridge itself, or in the heavy concrete rubble on the south bank by the A & P grocery. Thus it was not possible to examine all locations where the Colonial period bridge may have stood.

It is recommended that there be archaeological monitoring during the construction at the bridge to determine whether evidence of one or more earlier bridges is buried under the north end of the existing bridge, or on the south bank upstream of the existing bridge. Such monitoring can also record additional structural features of the existing bridge which will only be revealed when it is dismantled.

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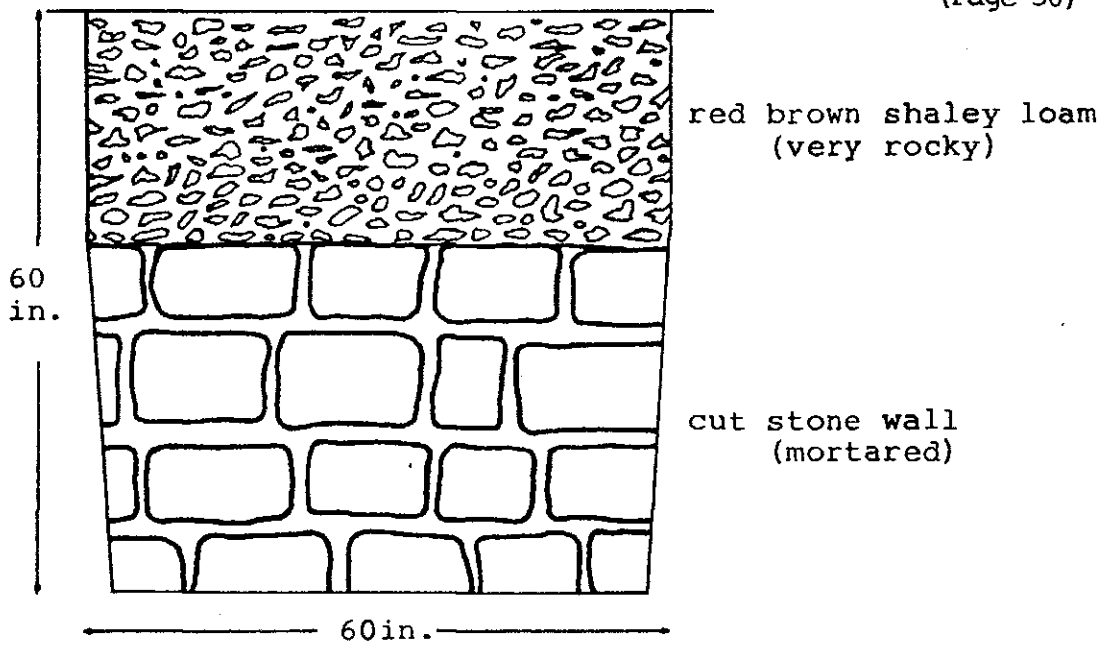
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Branch

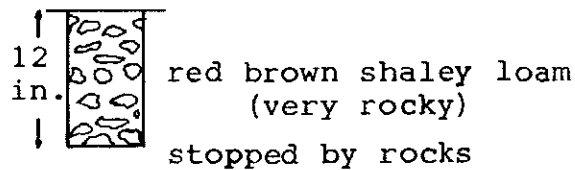
APPENDIX 1

TEST PIT PROFILES

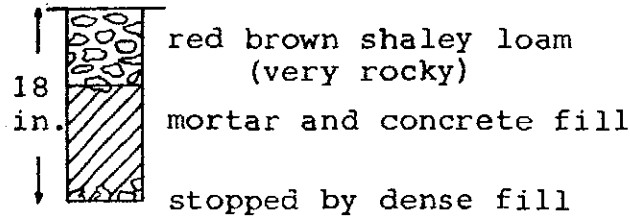
TEST 1 (facing west)



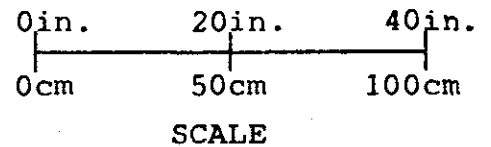
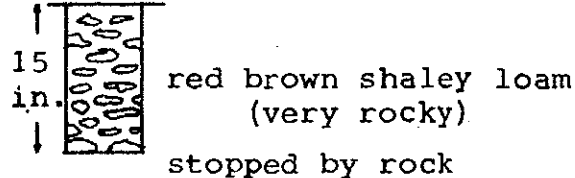
TEST 2



TEST 3



TEST 4



Tests excavated to sterile
subsoils.

TEST PIT PROFILE

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT
UNION COUNTY, N.J.
FIGURE 15

HISTORIC SITES RESEARCH

ARTIFACT LIST

- 3 sherds unglazed industrial porcelain
- 3 sherds white ironstone
- 1 sherd window glass (thin rolled sheet glass)
- 2 sherds saggers
- 1 dark blue-green bottle glass sherd
- 1 sherd panel-molded flat-sided bottle, clear or light blue-green glass, no lettering
- 1 neck & lip clear or light blue-green glass bottle (molded neck, lip applied, closure by cork or rubber stopper)

open lot

A & P Shopping Plaza

retaining wall

10

7&8

9

Stores

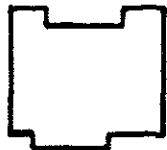
South Broad Street

Bridge

City Playground

St. James
Chapel
1897

Recreation
House



retaining wall

4

5

6

Firehouse
1927

wooded lot

scale in feet

0ft. 50ft. 100ft.

DIRECTION & POSITION
OF PHOTOGRAPHIC VIEWS

BROAD ST. BRIDGE DOCUMENTATION
ELIZABETH RIVER FLOOD CONTROL PROJECT

UNION COUNTY, N.J.

FIGURE 17